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fly is most abundant in rather wet and moderately warm seasons ; while warmth appears to be the chief element in developing the Aphides or plant lice, some species being more favored by a humid atmosphere, while others develop more rapidly in a dry season. "The cut-worms are developed more abundantly in such seasons as increase the army-worms, which in their normal habits are but cut-worms, massing in armies and migrating being really an abnormal condition in their history. Observation shows, as heretofore stated, that, as a general rule, those species which occasionally develop in such vast numbers require for this purpose two consecutive seasons, though the character of the seasons for the different species differ somewhat. That is to say, those which bring out one species are not the ones which bring out another. As examples of the correctness of this statement I have only to refer to the migratory locusts, the chinch bug, as heretofore shown, the Hessian fly, the army-worm, etc. The locust and the chinch bug require the same kind of seasons, that is, two successive dry years, the latter warm as well as dry ; consequently, when two such seasons prevail generally over the Northwest, both species are apt to appear, as was the case in 1874. But the case is different with the army-worm. This requires a dry summer and fall, and I am inclined to believe also a dry winter, followed by a cool and rather damp and cloudy spring. The two most noted years of its appearance in this State were 1861 and 1875, each of which followed a preceding dry year, but in neither case was the year in which it appeared warm, 1861 being one of average temperature, and 1875 rather cold. The latter, which is the only one for which we have the records of the different seasons, was more than usually damp in the spring and summer." Some meteorological tables are given in illustration.

These chapters are followed by a descriptive catalogue of larva ; that of the caterpillars of butterflies being compiled by Miss Nettie Middleton, that of the Sphingidæ, *Ægeridæ* and *Bombycidæ* by Mr. John Marten, while a chapter giving original notes on caterpillars is contributed by M. D. W. Coquillett. The Report closes with a reprint of Bulletin 4 of the U. S. Entomological Commission on the Hessian fly, by A. S. Packard, Jr.

WALCOTT ON THE ORGANIZATION OF TRILOBITES.¹—In this essay Mr. Walcott brings together the results of much patient labor in preparing sections and studying them with a view to settle the vexed question as to the nature of the limbs of the trilobite. The results are as follows : No antennæ have been discovered ; but "four pairs of manducatory jaws, formed by the basal joints of the four anterior pairs of appendages," which "have a general structure similar to the cephalic legs of *Limulus* and *Eurypterus*."

¹ *The Trilobite*: New and old evidence relating to its organization. By C. D. WALCOTT. Bulletin of the Museum of Comparative Zoology at Harvard College, Vol. VIII, No. 10. Cambridge, March, 1881.

Mr. Walcott also feels "justified in stating that there is a series of jointed legs extending from the cephalic shield beneath the thorax and pygidium to the posterior segment of the latter; that, as far as known, they were ambulatory, and formed of six or seven joints; that to the basal joint there was attached an epipodite and branchia; and that, from the proof we now have, there is little doubt but that the appendages beneath the pygidium did not vary essentially from those of the thoracic region. They may have terminated in a slender filament, or filaments, as but three joints have been seen in any one appendage." We congratulate the author on the success of his long-continued efforts and well-directed labors; he has fully demonstrated that Trilobites have slender jointed limbs on the general plan of those of *Limulus*, and not phyllopodous ones; while he has also shown that the branchiæ were also attached to certain of these limbs, though we may not be satisfied with his interpretation of the nature of these gills, and wait for further light on this extremely difficult point. His restoration of a Trilobite will be useful, although it does not seem entirely natural, but yet may express the results of Mr. Walcott's work thus far. He has settled, however, in an admirable way, the general nature of the appendages of the Trilobite, and is entitled to the thanks of palæontologists.

RECENT BOOKS AND PAMPHLETS.—Herpetologische Bemerkungen vorzugsweise über Stücke des Naturhistorischen Museums in Bremen. Von Dr. J. G. Fischer, in Hamburg. Mit 3 Tafeln u. Abbildungen. 8vo, pp. 16, 4 plates, boards. Bremen, 1881. From the author.

Musée Teyler. Catalogue Systematique de la Collection Palaéontologique. Par T. C. Winkler. Quatrième Supplément. Roy. 8vo, pp. 38. Haarlem, 1881. From the author.

La Revue Scientifique, de la France et de L'étranger. Revue des Cours Scientifiques (3^e Serie) Directeurs: MM. Antoine Breguet et Charles Richet. Paris, Octobre 29, 1881. From the directors.

Notice sur les Poissons Tertiaires de Céreste (Basses-Alpes). Par M. H. E. Sauvage. 8vo, pp. 22, 4 plates. Extrait du Bulletin de la Société Géologique de France. 3^e serie, t. VIII, seance du 21 Juin, 1880. Paris, 1881. From the author.

Value of Degrees Baumé given by different authors. Compiled by C. F. Chandler and F. G. Wiechman. 1881. From the authors.

South America—Brazil. Bolivia. Madeira and Mamore Railroad. By Dr. Isaac T. Coates. 1881. From the author.

Proceedings of the United States National Museum. 8vo, pp. 16. Washington, Government Printing Office, 1881. From the museum.

Proceedings of the Academy of Natural Sciences of Philadelphia. 8vo, pp. 48. Philadelphia, 1881. From the society.

The Honey Ants of the Garden of the Gods, and the Occident Ants of the American plains. By Henry C. McCook, D.D. 8vo, pp. 180, 13 plates, bound. Philadelphia, 1881. From the author.

On certain Cretaceous Fossils from Arkansas and Colorado. By C. A. White. 8vo, pp. 6, 1 plate. Ext. from Proc. Nat. Mus., 1881. Washington 1881. From the author.

Extra Census Bulletin. The areas of the United States, the several States and Territories, and their counties. By Henry Gannett, E. M. 4to, pp. 20, map. Government Printing Office, Washington, 1881. From the author.